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ABSTRACT

This paper examines the nature of teachers' experiences in one teacher center by describing their physical and verbal behaviors. Teachers were observed for a total of 27.8 hours, and each activity observed was noted in one of several categories listed under physical or verbal behavior. While the data do not permit a direct assessment of the teacher center's effects, they do disclose the nature and quality of opportunity available, and the ways teachers generally take advantage of those opportunities. The center seems to function most prominently as a curriculum workshop and resource area, with greater emphasis on the making of materials rather than on their use. It is a supportive environment with a strong emphasis on individuality. The center seems to support personal exploration and experimentation with materials, tools, and ideas. While firsthand experience is essential to the process of internalizing new concepts and beliefs, it is not sufficient in itself. The center could more fully exploit its potential to change teachers by encouraging more discussion among teachers about what they are doing in the center and in the classroom and why. (Tables with results from the observations are included.) (PB)

19.21

TEACHER BEHAVIOR DURING "OPEN HOURS" IN AN INDEPENDENT TEACHER CENTER

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A shorter version of this paper was presented at the AERA Annual Meeting in Washington, D.C. in April, 1975.

In the last few years the concept of teacher centers has captured the imagination of many concerned with improving teacher education and schooling. While some credit England with this innovation, a national survey recently concluded that more teacher center activity of far greater variety exists in this country than in any other.[1] Despite widespread interest and diverse activity, very little is known about what actually goes on in teacher centers. Both the theoretical and the descriptive literature stress the teachers' key role in educational reform; however, what teachers do in centers and how they might be affected by their association has received little empirical treatment.[2]

This paper examines the nature of teachers' experiences in one teacher center by describing their physical and verbal behaviors. It assumes that knowing how teachers voluntarily spend their time at the center should not only help clarify its functions, but also suggest criteria for assessing its effects. While our intent in this study was primarily descriptive, we did have some general expectations based on the Center's goals and our own notions about how it could help teachers integrate educational theory and practice.

The Center's orientation is best conveyed in the following excerpts from its major proposal:

> At the simplest level, the Center is a comfortable, relaxing place for teachers to come after school to do their regular work and planning. It is also a place where teachers can bring their teaching problems and find sympathetic listeners and concrete suggestions...

> ...the five of us who staff the Center are committed to 'open education.' We are vitally interested in seeing the expansion of viable choices for children and teachers within any class...
>
> ...We are also committed to the use of concrete manipulative materials within the classroom and we encourage teachers to make their own teaching materials.
>
> ...The Center is an open classroom for adults. It is an informal, supportive learning environment in which teachers make choices, pursue interests, explore new ideas, techniques and materials according to their own individual styles, priorities and needs.[3]

We were particularly interested in observing the naturally occurring behavior of teachers during the Center's "open hours" since many of our expectations were influenced by the Center's commitment to open education. Open education has been characterized by four operating principles:

> First, the room itself is decentralized: an open, flexible space divided into functional areas, rather than one fixed homogeneous unit. Second, the children are free for much of the time to explore this room, individually or in groups, and to chose their own activities. Third, the environment is rich in learning resources, including plenty of concrete materials, as well as books and other media. Fourth, the teacher and her aides work most of the time with individual children or two or three, hardly ever presenting the same material to the class as a whole.[4]

If we substitute "teachers" for "children" and "staff" for "teacher", this passage aptly describes how the Center operates every day after school, one evening a week and all day Saturday. Exceptions are those times when a specific workshop is offered. The association between teacher centers and open education is commonplace in England where local centers have played a major role in the reform of primary schools.[5] In fact, this

center sounded very much like Bailey's description of English centers as "local physical facilities and self-improvement programs organized and run by teachers...to make possible a review of existing curricula and other educational practices...and to encourage teacher attempts to bring about change.[6]

We expected that teacher behavior would be individualized not group oriented, active rather than passive. By active, we meant "doing" as well as "talking." We expected teachers to engage directly with the material and human resources at the Center in diverse way and staff to act as facilitators and resource people offering little "direct" instruction. We assumed that teachers would learn from each other through seeing and hearing what others were doing and through the casual swapping of ideas. Finally we expected that teachers would not only find psychological support and practical suggestions about materials and methods at the Center, but also come to "see things differently." The Center environment in general and the particular activities of individual teachers could provide concrete referents for the kinds of principles about teaching and learning which the Center espouses. We hoped that teacher behavior would reflect a concern not only with specific ideas but also with broader understandings and beliefs.

Setting and Subjects

The data were collected in a "independent"[7] teacher center located in a YMCA on Chicago's southside. The Center occupies two small adjoining rooms and an annex. Commercial and homemade curricular materials are displayed in the first room, which also houses a collection of books on

open education. The second room stocks the raw materials and the tools needed to make many of the materials on display. It also has a coffee pot and large work table. Off to one side is a small carpeted area for reading. In the annex is a long workbench with the power tools needed for wood and triwall carpentry projects. The space is intimate, cheerful and full of stimulation; the atmosphere is friendly and informal.

The subjects were 192 teachers (33 males and 159 females), all voluntary visitors to the Teacher Curriculum Work Center. While some teachers appear more than once in the observational records, no attempt was made to control for repeat visitors, since the purpose of the study was to observe general not individual patterns of behavior.

The teachers ranged in experience from pre-service students to teachers of more than ten years. The group included teachers from public, paracnial, private, "alternative" schools and day care centers located primarily but not exclusively on the southside of Chicago.

Personal data sheets were filled out by approximately one quarter of the teachers observed. We used this subsample to explore whether teachers from different kinds of schools or with different amounts of experience used the center in significantly different ways.

Staff were only observed in their verbal interactions with the teachers. The number of staff members present varied from one to four.

Method of Observation

An observation schedule was developed after an intensive period of observation in the Center. Narrative records were analysed for frequent types of physical and verbal behavior. The final observation form, an

on-the-spot category system, allowed us to describe teachers' on-going activities. It contains six categories for physical behavior and seven categories of talk.

After some experimentation with time sampling techniques, we decided to survey the Center every ten minutes observing each individual present for approximately one minute. Even at crowded times the Center could be surveyed without missing too much between observations of the same individual.

Data were gathered by three observers after a one-hour interrater field reliability check.[8] Only one observer covered the Center at a time. Because of the limited size of the rooms, it was possible to view most activity in the Center from the small reading area which was rarely occupied. The study design called for two visits to the Center during each time period when the Center had open hours (M-F 3:00-5:00, T 7:00-9:00, Sat. 10:00-5:00). At the beginning of each sweep the time was noted as well as the physical location of each teacher. Brief explanatory notes, usually about the kinds of materials under construction, were also kept.

The categories of teacher behavior were defined as follows:

Physical Behaviors

1. Note-taking

   Writing down ideas, sketching materials, listing references usually as a counterpart to browsing or listening.

2. Browsing

   General exploration of center resources, i.e., scanning shelves, taking materials and/or objects off shelf for superficial examination, flipping through books, activity cards.

3. Manipulating

   Playing with a game, following the directions on activity cards, working with manipulative or set of materials as intended.

4. Construction 1

   Replicating or copying materials in the Center, i.e., attribute game, geoboard, balance table. Making something which exists in the Center.

5. Construction 2

   Creating or originating a new set of materials using the general supplies, raw materials and/or special equipment. This includes a completely new game as well as a modification of something on display. It allows for construction projects which require some input from the teacher.

6. Watching

   Focused attention on someone else's activity.

7. Other

   Transitional behavior, i.e., making coffee, hanging up coat, paying for materials, coming and going.

Each physical behavior was coded in terms of its social setting: "alone" (A) if the teacher worked by himself: "parallel" (P) if the teacher worked with an awareness of others in his immediate vicinity but with no direct interaction; "cooperative" (C) if he directly collaborated with someone else.

Verbal Behavior

1. Social

   Exchanging personal information, greetings, anecdotes, general chit chat unrelated to school.

2. Technical

   Statements and questions about how equipment works, how something is made, what materials to use, "how to" talk related to construction, tools, location of raw materials.

3. Center talk (administrative)

   Statements and questions about Center procedures, programs. Includes checking out books and paying for materials.

4. School talk - general

   Non-instructional talk about school, relating anecdotes and experiences outside classroom, non-curricular in focus.

5. Classroom - specific

   Anecdotes about classroom experiences, not necessarily related to materials. References to particular children, activities, problems.

6. Resources (Materials, Methods)

   Questions and statements about materials and/or methods for teaching something; specific references to materials, activities, classroom organization, scheduling, record keeping. Curricular in broad sense.

7. Conceptual

   Statements about concepts "built into" materials, generalizing from teacher's experience as learner to child's experience; talk about how to extend learnings from various materials, talk about values, rationale of open education. More theoretical.

8. Other

In coding verbal behavior, the interacter was noted: "S" if the teacher talked with a staff member, "T" if he/she talked with another teacher.

Data Base

A total of 167 sweeps or 27.8 hours of observation were coded. Twenty-six percent of these observations consisted of a combination of talking and working, while 37% were coded as verbal interaction and 62%

as physical activity. Thus 678 observations yielded 987 instances of observed behavior. The data were provided by 192 individual teachers with the number of teachers per sweep ranging from one on fourteen occasions to fourteen once on Saturday. The average number of teachers per sweep was 4.08 across a six day week or 3.01 excluding the data for Saturday, clearly the busiest day. Saturday workshops attracted a number of visitors. Although these workshops are not held in the Center proper, observations were discontinued for approximately a half an hour each Saturday to minimize recording the entry behavior of workshop attendees. Table 1 gives a complete breakdown of observations for each day of the week including the average number of teachers per week.

Results

Basically we were interested in teachers' on-going behavior, what they did and talked about at the Center. General patterns of physical activity, verbal activity and combinations of the two are reported below.

Physical Activities

Table 2 summarizes the relative frequency with which the different categories of physical activities were observed. Making materials was clearly the dominant activity constituting 57.7% of all the physical behaviors. We were interested in how much construction involved replicating materials on display (Construction 1) and how much consisted of creating "new" materials using the general resources of the Center (Construction 2).

Constructing activities were fairly evenly divided between duplication (32.9%) of the total activity, and creation (24.8%). Obviously the degree

TABLE 1

Observed frequencies of teachers in the center across days of the week.

Day	# Teachers (observations)	# Sweeps	Avg. # Teachers/Sweep
Monday	34	14	2.43
Tuesday	40	13	3.07
Tuesday eve.	53	23	2.30
Wednesday	88	26	3.48
Thursday	31	8	3.87
Friday	71	21	3.38
Saturday	361	61	5.91
	678	166	

TABLE 2

Observed frequences of physical activities in the center.

Physical Activity	# observed	% of total	%A	%P	%C
Notetaking	20	3.2	70	30	-
Browsing	129	20.8	64.3	15.5	20.2
Manipulating	40	6.4	30	12.5	57.5
Construction 1	204	32.9	61.3	25.9	12.8
Construction 2	154	24.8	50	39.6	10.4
Watching	19	3.1	-	-	-
Other	55	8.8	-	-	-

Figures for %A, %P, %C refer to breakdowns within the activity categories for Alone, Parallel, Cooperative.

of creativity involved in the second kind of construction varied greatly. Rarely did a teacher come to the Center with a completely original idea. One teacher brought a small plastic box with drawers and proceeded to label each drawer according to different parts of speech and to fill the drawer with sample words. The object of the game, which now appears on display, is to make up sentences by choosing words from the various drawers. In most cases, teachers prepared a ditto for their class, laminated pictures which they brought to the Center, developed a version of a game already there. What distinguished this kind of "construction" was the requirement of some kind of teacher input beyond simply duplicating what was on display. Interestingly enough, more duplication took place on Saturday than during the week. Seventy-four percent of all constructing activity on Saturday was coded as Construction 1 in contrast to 33% during the week. Teachers tended to use Saturday to reproduce a quantity of materials or to replicate a more elaborate piece of equipment displayed at the Center, i.e., a triwall bookcase. Weekdays were often used to prepare materials for immediate classroom use. For example, teachers would mount a set of pictures or type samples of student writing for a homemade book. These kinds of activities were coded as Construction 2.

Browsing through the Center's resources was the second most frequently observed behavior (20.8%). Although sequential data were not collected, the observers noted that browsing often preceded making materials. The more passive categories of "watching" and "notetaking" represent only 6.7% of all physical activities, while the more active categories (constructing, browsing, manipulating) comprise 84.9%.

About half (56.9%) of all physical activities were coded alone, a

quarter (26.5%) coded parallel and the rest (16.64%) cooperative. Individual-oriented activities predominated. While much of the construction (approximately 55%) was carried out alone, manipulating materials proved to be a cooperative activity involving discussion 93% of the time.

Verbal Interactions

Table 3 summarizes the relative frequencies for the various categories of verbal behavior along with staff-teacher and teacher-teacher breakdowns within each category.

Most of the talk in the Center which occurred without an accompanying physical activity was technical or administrative: 33.7% about materials and equipment, and 15% about Center programs and policies. Since teachers seem to spend most of their time at the Center making materials, the dominance of technical talk is not surprising. It is likely that much of the administrative talk occurred with newcomers who would understandably require some orientation to the Center. Socializing and conceptualizing were equally infrequent (11.4%). We were not surprised (though perhaps a bit disappointed) with the infrequency of conceptual talk, however, we were rather surprised with the small amount of observed socializing. While the general informality of the place and friendliness of the staff create a relaxed, semi-social feeling, a norm of productivity seems to operate. This is all the more impressive since teachers come voluntarily to the Center after a full day or week of work. Only a small percentage of the observed interactions involved references to curricular materials and methods (9.8%). There was also very little discussion of particular classroom problems and experiences (8%).

TABLE 3

Observed frequences of verbal interaction in the center.

Verbal Interaction	# observed	% of total	%S	%T
Social	43	11.4	46.5	53.5
Technical	127	33.7	66.9	33.1
Center	58	15.4	81	19
School General	38	10.0	26.3	73.7
Classroom Experince	30	8.0	46.7	53.3
Curricular Resources	37	9.8	64.9	35.1
Theoretical	43	11.4	67.4	32.6
Other	1	.3	-	-

Figures for %S and %T refer to breakdowns within the verbal interaction categories for staff interaction vs. teacher interaction.

Another interesting aspect of the data on verbal behavior unaccompanied by some physical activity relates to the question of who talks to whom about what. Technical and theoretical talk were the two smallest categories of talk between teachers except for Center talk which understandably occurred with a staff member. Teachers tended to socialize and share school experiences with each other. The high incidence of technical and conceptual talk with staff suggests that staff are viewed as the main source of both practical and theoretical knowledge. The preponderance of "how-to" talk implies that the staff take the role of technical advisers or facilitators.

In general teachers tended to use the Center more as a materials-making workshop than a forum for discussion. The overall impression from the data on verbal interaction is that talk at the Center reinforces the dominant activity.

Combination of Physical and Verbal Behavior

The data on the combination of physical and verbal activity provide some additional insights about the culture of the Center and the occasions for articulated learning which the various activities potentially present. We can ask the question in two ways: when teachers are making materials at the Center and talking, what are they talking about? Or, when teachers are socializing at the Center while engaged in some other activity, what else are they doing? The difference between these two vantage points is illustrated by the following: While only 16% of the observed duplication of materials was accompanied by socializing, 43% of the socializing which occurred while teachers were working took place during this activity.

Table 4 summarizes the kinds of talk which accompanied the various physical activities. Browsing seemed to occasion talk about Center procedures (29%) and resources (22%). As such, it serves as an introductory activity, helping teachers become acquainted with the material and programatic possibilities at the Center. It also stimulated some technical talk (21%), usually questions about how some material or manipulative which the teacher noticed while exploring the environment could be made. This supports our observation that browsing frequently led to some kind of construction activity.

Playing with the manipulatives on display stimulated a fairly high percentage of technical talk (54%), thus drawing teachers into materials-making. It was also accompanied by the most conceptualizing (16%). In other words, playing an attribute game, working with the balance beam, experimenting with the objects in a science box did stimulate some talk about the learning process, the place of particular materials in a curricular sequence, the relationship between the materials and child development. While manipulating seems to hold the potential for encouraging teachers to make a variety of conceptual connections, the tendency to articulate these connections was not very prevalent.

Construction was accompanied by more talking in general than any other physical activity. It is not surprising that most of this talk was technical, slightly more while duplicating (55%) than creating (45%). There was only a moderate amount of socializing while teachers constructed materials, although this category represents the second most frequent kind of talk which accompanied construction.

TABLE 4

Kind of Talk Accompanying Kind of Physical Activity
(Percentages refer to Columns)

	Note.	Brows.	Manip.	Con. 1	Con. 2	Watch
Social	-	3 4%	4 10%	12 16%	8 11%	1 11%
Technical	1 25%	16 21%	20 54%	40 55%	33 45%	2 22%
Center	1 25%	22 29%	2 5%	5 6%	4 5%	2 22%
School	-	5 6%	-	7 9%	10 13%	-
Class	-	5 6%	1 2%	2 2%	8 11%	2 22%
Curricular	2 50%	17 22%	3 8%	2 2%	5 6%	1 11%
Conceptual	-	6 8%	6 16%	4 5%	4 5%	1 11%
N	4	74	37	72	72	9

Table 5 shows the percentages of physical activities which accompanied the various categories of talk. While the strong relationship between technical talk and making materials still dominates, some interesting differences between the kinds of conversations which accompanied the two kinds of construction emerge from this data. Teachers tended to socialize more while replicating materials (43%) than they did while developing new materials (29%). In addition, the more original construction activities occasioned more statements about how these materials could be used in the classroom. Forty-four percent of the classroom-specific talk which accompanied some physical activity occurred while teachers were making their own materials in contrast to 11% which accompanied the duplication of something at the Center. When a teacher uses the Center's general resources to embody her own idea in a concrete form, she probably has in mind a particular purpose for the materials, i.e., to teach a concept, to help an individual child. Duplicating materials already in existence may stimulate less thinking by the teacher about their use. We do not know what goes on in the teacher's head while reproducing something found on display. It may be, however, that providing a lot of homemade models not only gives teachers concrete suggestions, but also inadvertently encourages indiscriminate stockpiling of materials.

Discussion

While the data do not permit a direct assessment of the Center's effects, they do disclose the nature and quality of opportunity available and the ways teachers generally take advantage of those opportunities. Since each teacher selects his own activities at the Center, it is not

TABLE 5

Kind of Physical Activity Accompanying Kinds of Talk
(% refer to rows)

	Note.	Brows.	Manip	Con. 1	Con. 2	Watch	N
Social	-	3 11%	4 14%	12 43%	8 29%	1 4%	28
Technical	1 1%	16 14%	20 18%	40 36%	33 29%	2 2%	112
Center	1 3%	22 61%	2 6%	5 14%	4 11%	2 6%	36
School	-	5 28%	-	7 32%	10 45%	-	22
Class	-	5 28%	1 5%	2 11%	8 44%	2 6%	18
Curricular	2 7%	17 57%	13 10%	2 7%	5 17%	1 7%	30
Conceptual	-	6 27%	7 32%	4 18%	4 18%	1 5%	22

possible to describe uniform treatment and outcomes. Indeed, such an expectation would contradict the basic modus operandi of the Center which depends on individual choice and initiative and relies on a self-selected population.

We discovered no significant differences in the behavior of teachers from different kinds of schools and with different amounts of teaching experience. This finding which also emerged from a questionnaire administered to teachers who used a center in New York City suggests that Center opportunities appeal to a variety of teachers in similar ways.[9] The general patterns of teacher behavior which we did uncover do suggest a range of possible outcomes.

The Center seems to function most prominently as a curriculum workshop and resource with a greater emphasis on the making of materials than their use. While materials made at the Center imply new teaching practices, the Center does not focus directly on the teacher's interactive behavior. In this sense it is not concerned with teacher training per se.

The center is a supportive environment with a strong emphasis on individuality. Here teachers do their own thing without the pressure of evaluation. The opportunity for direct engagement with new materials, tools, and ideas may not only increase the teacher's "response repetoire," but also his feeling of professional responsibility. The voluntary nature of Center participation must also enhance the teacher's sense of autonomy. Here the goal is teacher-made not teacher-proof curricula.

It is likely that teachers carry from the Center into the classroom specific ideas about activities, methods and materials. For us a major question concerns the extent to which teachers not only add specific instructional methods and materials to their repetoire, but also gain

the kind of broader understanding which results in new ways of teaching. There is a difference between making a game for teaching the concept of place value and developing insights into the rationale for using concrete materials as a basis for learning abstract concepts. If we assume that teachers' classroom behavior is largely determined by their internal frame of reference, then we must consider whether the Center also helps to promote new understandings.

This is particularly important in the movement from traditional to open classrooms which require more complex classroom organizations and more teacher responsibility for curricular decisions. Bussis and Chittenden, who have been studying the personal constructs of teachers engaged in this kind of transition, make the following observation:

> Simply 'having a new idea of feeling,' while important in its own right, is relatively inconsequential for affecting behavioral change. Translating an idea into action and experiencing its consequences counts for much more and constitutes the basis of personal (as opposed to 'academic') knowledge and learning. This last assumption points up the obvious importance of experience in shaping personal constructs and suggests that if significant progress in teaching is to occur, teachers need a quality of experience that supports personal exploration, experimentation, and reflection.[10]

The Center seems to support personal exploration and experimentation with materials, tools and ideas. Indeed, we were tempted to subtitle this paper "Kindergarten Revisited" after a style of laboratory work which David Hawkins recommends as an approach to science teaching for adults as well as children.[11] No pejorative connotations are intended. Rather the phrase highlights the importance of time to "mess about," to examine materials carefully, to try some experiments and see what happens, to get

the feel of the thing itself. The Center facilitates this opening phase of learning. Furthermore, activities which teachers engage in hold the potential for stimulating new awarenesses about children, teaching and the learning process.

While first-hand experience is essential to the process of internalizing new concepts and beliefs, it is not sufficient in itself. One also needs a conceptual framework to organize one's experiences and this, in turn, involves the meaningful use of language. The observational data do not tell us directly whether teachers are seeing relationships and drawing connections between their experiences in the Center and in the classroom. It would seem, however, that the Center culture does not directly encourage this kind of thinking. Whatever insights teachers get at the Center are "aught" not "taught" since the dominant mode of behavior is active not reflective, concrete not conceptual.

The Center could exploit more fully its potential impact on teacher change by encouraging more discussion among teachers about what they are doing in the Center and in the classroom and why. The real challenge is not only to provide a supportive and stimulating learning environment for teachers, but also to direct and extend their learning through reflection. This kind of dialogue would grow out of teachers' direct experiences in the Center and classroom, and could lead to new and deeper understandings of the teaching/learning process. We are recommending that the Center strive for a better balance between unrestrained exploration and experimentation and conscious formulation and reflection. This is a logical extension of the Center's orientation and would move the Center from the

position of responsive resource to more active intervener in the professional development of teachers.

Indeed the unique contribution of teacher centers in general may well relate to this integrating function. Those who point to the need for a new kind of institution like a teacher center frequently base their arguments on the fact that no existing institution has this particular focus as its major concern.[12] While universities are primarily devoted to the discovery of knowledge and schools to the day-to-day education of children, centers could concentrate on the continuing education and support of teachers. Such an effort would draw on the resources of both universities and schools and help teachers integrate both theoretical and practical knowledge.

This study has examined the nature of teachers' experiences in one teacher center by focusing on their general patterns of behavior. The questions it raises about the relationship between Center experiences and teacher characteristics, beliefs and practices suggest the need for further exploration through studies of individual teachers. This will be the next step in our research. While the general approach here is more appropriate for program evaluation, the study demonstrates the importance of observation in any comprehensive evaluation strategy. At this formative stage in the teacher center movement, documentation of center goals and activities is essential to informed planning and policy-making. Hopefully this study will contribute to a clarification of the role of centers in the on-going education of teachers.

This study, which is part of a larger investigation, was funded by the Study Commission on Undergraduate Education and the Education of Teachers. The author also wishes to acknowledge the assistance of Tom David and Margaret Riel, graduate students involved in the observation study.

FOOTNOTES

1. Yarger, Sam and Schmieder, Allen. "Teacher/Teaching Centering in America," Journal of Teacher Education, Spring 1974.

2. The only study we located that gathers data on these questions is a formative evaluation of the Workshop Center for Open Education conducted by FTS. See Chittenden, Edward, Anne Bussis, et al. First Year Evaluation Study of the Workshop Center for Open Education, City College of New York, 1973.

3. Bradbury, Jean, et al. Proposal for the Teacher Curriculum Work Center, 1972-73. (mimeo)

4. Gross, Beatrice and Gross, Ronald. "A Little Bit of Chaos," Saturday Review, May 16, 1970.

5. Thornbury, Robert. Teachers' Centres. Agathon Press, New York, 1973.

6. Bailey, Stephen. "Teachers' Centers: A British First." Phi Delta Kappan, 53, No. 3 (November, 1971).

7. The term "independent" teacher center is taken from an organizational typology of centers developed by Sam Yarger and Albert Leonard. According to this typology, an independent center "is characterized by the absence of any formal affiliation with an established institution." Yarger, Sam and Leonard, Albert. A Descriptive and Analytical Study of the Teaching Center Movement in American Education. School of Education, Syracuse University.

8. The results of that check were as follows:

	1&2	1&3	2&3
Phy. Act.	85.4	88.8	86
Soc. group	84.6	93.8	92.3
Verb. act.	100	96	96.4
Interactor	100	95	96.1

9. Chittenden, Edward, Anne Bussis, et al. First Year Evaluation Study of the Workshop Center for Open Education. City College of New York, 1973, p. 26.

10. Bussis, Anne and Chittenden, Edward. "Reflection in Teaching," Notes, City College of New York, Spring, 1974. Underlining added.

11. Hawkins, David. "Messing About in Science." Open Education. Charles Rathbone, ed., Citation, 1971.

FOOTNOTES

12. Smith, B.O. Teachers for the Real World, American Association of Colleges for Teacher Education, 1969, p. 95; "Task Force '72 Final Report," Washington, D.C.: U.S. Office of Education, Bureau of Education Professions Development, 1972.